

FACTORS AFFECTING THE ECONOMIC JUSTIFICATION
OF A SEVERANCE TAX IN KANSAS

by

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TABLE OF CONTENTS

	Page
INTRODUCTION.....	1
Purpose of This Study.....	2
Characteristics of The Problem.....	2
Procedure Involved in This Study.....	3
Review of Literature on Severance Taxes.....	3
GENERAL NOTES ON THE SEVERANCE TAX.....	5
Definition of Terms.....	6
Classifications.....	6
Arguments For and Against Severance Tax.....	7
The Severance in Use.....	8
RELATIVE POSITION OF THE KANSAS PETROLEUM INDUSTRY.....	10
PRESENT TAX BURDEN ON THE PETROLEUM INDUSTRY.....	11
PRODUCTIVITY OF CAPITAL INVESTED IN THE PETROLEUM INDUSTRY...	14
COMPARISONS IN COSTS.....	19
RELATIVE IMPORTANCE OF MAJOR COMPANIES IN KANSAS.....	24
EXTENT OF STRIPPER WELL PRODUCTION.....	27
SUMMARY AND CONCLUSIONS.....	30
Summary.....	30
Conclusions.....	32
ACKNOWLEDGMENT.....	33
REFERENCES CITED.....	34

INTRODUCTION

The unceasing search carried on by governments to find new sources of revenue has resulted in a great number and variety of taxes. Among the more recent are those special levies imposed upon the extractive industries. Such imposts have generally become known as severance taxes, although they may be called by other names. Such levies in general are applied to the removal of natural resources.

Severance taxes have received the particular attention of state governments throughout the United States, and today more than half of the states have levies which may be classified as such. Some of these, as in Kansas, are mere regulatory measures and assume little importance in the tax structure of the enacting state. Others, such as the Texas severance tax, contribute substantially to the financing of state government.

Pressure has been exerted in Kansas to obtain the enactment of a severance tax capable of producing a significant amount of revenue for the state. Undoubtedly the next legislature will be confronted with new demands for a severance tax.¹ This study is directed only at some of the complex issues involved.

¹ Harkness, Senator Al. Address before Third Annual Conference of Kansas Assessing Officers, Kansas State College, Manhattan Kansas, January 5-6, 1948. Arranged by Kansas Commission of Revenue and Taxation in cooperation with Kansas State College and Kansas County Clerks Association, p. 65.

Purpose of This Study

The purpose here, in brief, is to inquire into the economic justification of a severance tax in Kansas. Questions of legality, methods of application, administrative problems, and other details will not be touched upon. The study is an attempt to determine whether or not an added tax on the extractive industries is advisable from an economic standpoint. Fidelity to this aim has made necessary a certain amount of reticence concerning technical details of the tax itself.

It was found convenient--perhaps necessary--to restrict the investigation to a single resource. Because of the position of primacy among the state's mineral products, and because editorials and debates have singled it out for special attention, oil became a logical choice. This selection was not predicated upon a bias in favor of, or against, the petroleum industry. Except for the reasons given above, coal, zinc, natural gas, sand, gypsum, or any other mineral might well have been subjected to analysis, for like oil, they are natural resources.

Characteristics of the Problem

A prime characteristic of the severance tax problem in Kansas is the controversial nature of the issues. Disagreement has arisen whenever it has been proposed as a revenue measure. State politics in Kansas has not been without its pressure

groups.² There have been on the one hand those interested in finding additional levies to help finance state government. On the other hand those groups upon whom the tax would have fallen have been inclined, naturally enough, to fight the proposal. An impartial attitude toward the tax is, indeed, so rare that unprejudiced information concerning it is difficult to obtain.

Procedure Involved in this Study

Research procedure was directed into three informational channels, that is, correspondence, personal interviews and reading of the available literature on the subject. Correspondence served the purpose, through the generous cooperation of the revenue departments of various states outside Kansas, of providing factual data concerning the severance tax in operation. Personal interviews were an effective means of gaining ideas and suggestions relative to methodology. The none too abundant literature, in the earlier stages of reading, afforded a limited over-all view of the subject. A study of statistical data pertaining to financial aspects of the petroleum industry has been helpful.

Review of Literature on Severance Taxes

To date the literature on severance taxation has been con-

² Harkness, loc. cit. p. 65

finned mostly to articles in periodical publications, bulletins released by governmental agencies, and studies which have been conducted by educational institutions. Organizations such as the Federation of Tax Administrators have also published some inquiries into the subject. Many text-books on public finance have briefly referred to levies upon natural resources, but generally with no great detail.

An all-inclusive review of magazine articles written on severance taxes is hardly possible here. If quotability can be considered a measure of importance, though, at least one such article is deserving of mention. H. L. Macon's "Severance Taxes in Alabama",³ has become a fountain of information for students and research groups interested in this field.

Governmental agencies, such as the Research Department of the Kansas Legislative Council, are interested in the subject and as a result many reports and memoranda have been issued. Here again, detailed review would serve no significant purpose. The importance of such contributions, however, must not be overlooked. They have been both substantial and valuable.

Studies made under the auspices of educational institutions have probably been more comprehensive than have the others. Only a few of the more notable papers that have come to the writer's attention will be mentioned here. Malcolm W. Davesson of the

³ Macon, Hershall L., "Severance Taxes in Alabama", Tax Magazine 114-21, 142, 181-6, 206 March, April, 1934.

University of California has prepared a publication entitled "Severance Taxation".⁴ Grace M. Kneedler of the same school prepared a work in 1939, carrying an identical title.⁵ More pertinent to this area was a bulletin entitled "A Proposal for Levying a Severance Tax on Petroleum in Kansas",⁶ by Dr. W. E. Sheffer of Manhattan. L. F. Miller prepared a bulletin entitled "Kansas Oil Property Taxation in Relation to Farm Taxes".⁷

A bulletin entitled "State Taxes on Natural Resources",⁸ prepared by the Federation of Tax Administrators, made available more current data of a general nature.

GENERAL NOTES ON THE SEVERANCE TAX

Preliminary to an analysis of economic factors with which this paper will be concerned, a few comments may be helpful as

⁴ Davesson, Malcom W., "Severance Taxation", 4 p. (min.) (Legislative Problem No. 3) Berkely, University of California, Bureau of Public Administration, Dec. 29, 1934.

⁵ Kneedler, Grace M., "Severance Taxation" Bureau of Public Administration, University of California (Legislative Problem No. 11) April 10, 1939.

⁶ Sheffer, Dr. W. E. "A Proposal for Levying a Severance Tax on Petroleum in Kansas", Kansas Congress of Parents and Teachers, vol. 1, no. 6, Dec. 26, 1936.

⁷ Miller, L. F., "Kansas Oil Property Taxation in Relation to Farm Taxes" Agricultural Experiment Station, Kansas State College, Manhattan, Kansas, Circular 195, December, 1939.

⁸ Federation of Tax Administrators, "State Taxes on Natural Resources", RM-240 (Formerly State Severance Taxes) Revised March 12, 1946.

background material. It is well to understand the nature of a severance tax and to consider the ways in which such taxes may be classified.

Definition of Terms

The severance tax may be defined as a levy upon natural resources at the time they are severed or removed from the land at a fixed percentage of their market value, a fixed amount per unit produced, or a fixed percentage of the net proceeds.⁹ This then, would include privilege, license, occupation, and production taxes as long as the amount of the tax is measured by the quantity or the value of the natural resources covered.

Classifications

Severance taxes are classified in several ways as follows:

1. The tax may be general or selective. A general tax is one which is imposed upon a number of resources. A selective tax is one which is limited to certain resources.

2. The tax may be imposed in addition to an ad valorem tax on property or in lieu thereof.

3. The tax may be specific or ad valorem. A specific tax is applied according to the weight or volume of production. An ad valorem tax is applied against the value of the severed product.

⁹ Miller, L. F., op. cit. p. 13

Arguments For and Against Severance Tax

It was suggested earlier that the severance tax has been a controversial issue. There can be no attempt here to resolve all the arguments advanced for and against it, but the more important differences may well be brought into focus at this point.

Arguments for:

1. There is need for more revenue. The need for additional revenue during the depression, along with the movement to lighten the tax burden on real estate gave impetus to severance taxation.¹⁰

2. It is more equitable than the property tax. It was first thought of as an attempt to equate the burden borne by the producers of natural resources with that of other industries and to avoid the imperfections and constitutional difficulties (equality and uniformity) of applying the property tax.¹¹

3. It encourages conservation of our natural resources.¹² Some contend that property taxes applied to natural resources promote wasteful exploitation. The severance tax is not paid until the resource is "harvested", therefore excessive production is restrained.

¹⁰ Federation of Tax Administration, op. cit. p. 3.

¹¹ Ibid., p. 4

¹² Ibid., p. 4

4. Natural resources are the heritage of the state. This theory holds that the state is justified in taxing individuals who enjoy the gifts of nature as compensation for the resources of which it has been deprived.¹³

Arguments against:

1. Heavy taxes force uneconomic exploitation and waste.¹⁴ The desire of the producer to "get out from under" may force hurried production.

2. Natural resources are of no value to society until severed and made salable, and their removal "gives opportunity for labor, merchandising and other economic enterprises and should not be penalized by taxes".¹⁵ This is essentially an argument against the natural heritage theory.

3. All property should be taxed on an equal basis. This stems from the provisions in state constitutions providing for equal and uniform taxation.

The Severance Tax in Use

Severance taxes are relatively unimportant sources of revenue in most states. They contribute about 1.3 percent of all state levies, including unemployment compensation taxes.¹⁶ In

¹³ Ibid., p. 5

¹⁴ Ibid., p. 6

¹⁵ Ibid., p. 6

¹⁶ Ibid., p. 6

a few states, however, such as Texas, Louisiana, and Oklahoma, they are very productive revenue measures. As an example, for the fiscal year, ending February 1, 1947, Texas collected a gross production tax of \$54,845,278 on a production of 768,-467,590 barrels of oil.¹⁷ Table 1 is indicative of the comparative importance of the severance tax in its relation to other state levies. Naturally it has loomed larger in the tax structure of those states which have been abundantly blessed with natural resources and have applied a rather high rate of tax for the privilege of severing them.

Table 1. Percentage of revenue collected from severance taxes, by state and year*.¹⁸

State	1943 % of state revenue	1944 % of state revenue	1945 % of state revenue
Alabama	0.7	0.7	0.7
Arkansas	2.4	3.2	2.3
California	0.1	0.1	0.1
Colorado	0.6	0.07	0.07
Idaho	0.7	0.7	0.5
Kentucky	0.05	0.1	0.06
Louisiana	13.8	13.5	13.6
Michigan	0.3	0.2	0.2
Montana	5.0	5.2	4.2
Nevada	1.1	0.8	0.8
New Mexico	3.8	4.3	3.6
Oklahoma	10.8	9.4	10.0
Oregon	0.2	0.2	0.2
Texas	17.8	16.3	20.9
Utah	2.8	3.2	3.7
Washington	0.1	0.1	0.1

*Source: US. Census, State Tax Collections, 1943, 1944, 1945.

¹⁷ Personal letter from Geo. H. Sheppard, Comptroller of Public Accounts, State of Texas, April 19, 1948

¹⁸ Federation of Tax Administrators: op. cit.

RELATIVE POSITION OF THE KANSAS PETROLEUM INDUSTRIES

Fundamental, perhaps, to a study of the Kansas petroleum industry is a brief consideration of its position among the oil producing states. A convenient way to indicate this position is to show the percentage of the amount which it has contributed to the entire United States volume of production. As indicated in Table 2. Kansas has ranked fifth among the states in the production of petroleum with the exception of the years 1939-42, when it was sixth. Two states, combined, Texas and California, have consistently produced more than half the Nation's total crude oil. The next four ranking states, Oklahoma, Louisiana, Kansas and Illinois, have been responsible for most of the re-

Table 2. Percentage of total crude oil produced in the United States, 1936-45, by principal states¹⁹

State	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945
Texas	38.9	39.9	39.2	38.2	36.4	36.1	34.8	39.5	44.5	44.1
California	19.5	18.6	20.6	17.7	16.6	16.4	17.9	18.9	18.6	19.1
Oklahoma	18.8	17.9	14.4	12.7	11.5	11.0	10.2	8.2	7.4	8.1
Louisiana	7.2	7.1	7.8	7.4	7.7	8.2	8.3	8.2	7.7	7.6
Kansas	5.3	5.5	5.0	4.8	4.9	5.9	7.0	7.0	5.9	5.6
Illinois	.4	.6	2.0	7.3	10.9	9.4	7.7	5.5	4.6	4.4
New Mexico	2.5	3.1	2.9	3.0	2.9	2.8	2.3	2.6	2.4	2.2
Wyoming	1.3	1.5	1.6	1.7	1.9	2.1	2.4	2.3	2.0	2.1
Arkansas	.9	.9	1.3	1.7	1.9	1.9	1.9	1.8	1.8	1.7
Mississippi	-	-	-	-	.3	1.1	2.1	1.2	1.0	1.1
Michigan	1.1	1.3	1.3	1.3	1.5	1.2	1.6	1.4	1.1	1.0
Pennsylvania	1.6	1.5	1.4	1.4	1.3	1.2	1.3	1.0	.8	.7
All others	2.4	2.1	2.1	2.1	2.2	2.6	2.5	2.4	2.2	2.2

*Subject to revision

¹⁹ United States Department of Interior, Bureau of Mines, Minerals Yearbook, 1945.

maining production. Not only is the industry important within the state, then, but it is an important part of the the total national production.

PRESENT TAX BURDEN ON THE PETROLEUM INDUSTRY

One of the important factors involved in a proposal to impose a levy upon an industry is the existing tax burden of the industry affected. In this respect, if all the taxes imposed upon the petroleum industry are considered, its contribution has been substantially large. This would include all the taxes paid, from the point of severance to the time when the finished product reached the consumer, and to all three levels of government.

The total petroleum tax bill for 1938, 1939, and 1940 (Table 3, later data not given), was \$1,286,114,473, \$1,354,166,333, and \$1,520,291,044, respectively. Petroleum production for the same years was 1,214,355,000 barrels, 1,264,962,000 barrels, and 1,353,214,000 barrels, respectively.²⁰ This would mean that each barrel of petroleum produced would, in 1938, accumulate \$1.06 in taxes by the time it reached the consumer. In 1939, the tax accumulated to \$1.07 and in 1940 almost \$1.12.

²⁰ Fanning, Leonard M. "The American Oil Industry" in "Our Oil Resources" Edited by Leonard M. Fanning, McGraw-Hill Book Co, New York, 1945, p. 309.

The largest single contributor was the state gasoline tax, followed by the federal gasoline tax, real and personal property taxes, income taxes, severance taxes and twelve other levies. Severance taxes and drilling permits (lumped together) ranked fifth in respect to collections. In the same years and order as above, they contributed \$40,000,000, \$41,600,000, and \$42,000,000 in taxes. In 1938 and 1939, then, severance taxes accounted for approximately 3.1 percent of the taxes paid by the industry, and 1940, for about 2.8 percent.

Whether or not the petroleum industry has been paying more than its fair share of taxes depends upon how it has compared with other industries. Unfortunately, exact figures were not available by which such comparisons can be made. The following quotation from Dr. Frederick Guild, however, is indicative of the possibilities:

In Kansas, it was recently stated that the oil industry was paying 23 percent of the state taxes. In a New Mexico study two years ago, figures were presented to show the total amount contributed by the industry. A comparison of that figure with the total figure for state taxes collected in 1945 gave the total contribution of the oil industry to the New Mexico government as the equivalent of slightly more than 38 percent of the total state tax collections. If royalties and leases, etc. are excluded, the percentage still remains slightly more than 24 percent. This may mean that the industry is paying more than its fair share of taxes, or it may merely mean that the industry has grown rapidly in the past 20 years and has become one of the leading industries in certain of the states, and consequently,²² as such, is bearing a major share of the state tax burden.

²¹ Ibid., p. 309.

²² Guild, Frederick H., Summary statement before Southwestern Regional Oil and Gas Conservation Conference, Oklahoma City, Oklahoma, Feb. 21, 1949.

Table 3. Petroleum Tax Bill¹

Tax ²	Total taxes collected		
	1940 ³	1939	1938
State gasoline taxes	\$868,000,000	\$816,433,000	\$766,853,000
Federal gasoline tax	281,653,761	215,217,325	200,880,797
Real- and personal-property taxes	140,000,000	133,500,000	133,200,000
Income taxes: federal state, local	100,000,000 ⁴	59,800,000	57,000,000
Severance taxes and drilling permits: state and local	42,000,000	41,600,000	40,000,000
Lubricating-oil taxes: federal and state	34,420,051	29,836,487	31,595,340
Federal pipe-line tax	12,117,232	10,971,177	11,599,693
Federal import taxes	8,000,000	8,295,000	6,557,501
Capital-stock taxes	7,200,000	7,200,000	7,140,000
State petroleum inspection fee	6,000,000	5,610,000	5,250,000
Registration fees for petroleum vehicles	5,880,000	5,620,000	5,590,000
Federal excises on automotive equipment used by petroleum industry	4,500,000	4,310,000	4,300,000
Local gasoline taxes	4,000,000	4,320,000	4,350,000
Corporation franchise and mercantile license	4,000,000	4,000,000	4,080,000
Sales, privilege, and occupational taxes: state and local	2,500,000	2,263,000	2,250,000
State sales taxes on automotive equipment used by petroleum industry	200,000	187,000	185,000
Federal tax on crude oil processed		2,944 ⁵	583,142 ⁵
Total petroleum tax	1,520,291,044	1,354,166,333	1,286,114,473

¹ Authority: American Petroleum Industries Committee.² Listed in order of 1940 tax collections.³ Many items preliminary rough estimates.⁴ Includes estimate of 1940 tax collections.⁵ Tax expired June 30, 1938; subsequent collections are late returns.

PRODUCTIVITY OF CAPITAL INVESTED IN THE PETROLEUM INDUSTRY

Another factor to be considered is the productivity of capital employed in the industry. Fortunately, for purposes of analysis two studies helpful in this approach have been made in recent years. The Department of Petroleum Economics of the Chase National Bank for a number of years has been conducting a study of the capital employed in the petroleum industry. Financial and operating data of thirty representative companies doing about two-thirds of the domestic business of the entire industry were combined and summarized by the bank. A generous portion of that study has been utilized in this work.

The companies included consist of three types:²⁴

A. Nine companies engaged principally in crude oil production, as follows:

1. Amerada Petroleum Corporation
2. Barnsdall Oil Company
3. Houston Oil Company
4. Louisiana Land and Exploration Company
5. Pacific Western Oil Corporation
6. Plymouth Oil Company
7. Seaboard Oil Company
8. Texas Gulf Producing Company
9. Texas Pacific Coal and Oil Company

²⁴ Pogue, Joseph E., and Frederick C. Coqueron, "Capital Employed in the Petroleum Industry" in Fanning, op. cit., pp. 266-7.

B. Four companies with production averaging in excess of requirements are:

1. Continental Oil Company
2. Ohio Oil Company
3. Phillips Petroleum Company
4. Skelly Oil Company

C. Seventeen companies with refineries throughout in excess of production are as follows:

1. Atlantic Refining Company
2. Gulf Oil Corporation
3. Lion Oil Refining Company
4. Mid-Continent Petroleum Corporation
5. Pure Oil Company
6. Richfield Oil Corporation
7. Shell Union Oil Corporation
8. Sinclair Oil Corporation
9. Socony-Vacuum Oil Company
10. Standard Oil Company (California)
11. Standard Oil Company (Indiana)
12. Standard Oil Company (New Jersey)
13. Standard Oil Company (Ohio)
14. Sun Oil Company
15. Texas Company
16. Tide Water Associated Oil Company
17. Union Oil Company of California

A study made by the National City Bank of New York resulted in a compilation of data from more than 1,100 manufacturing concerns. These data afforded an opportunity for a comparison between petroleum and manufacturing industries. The results, as far as net returns on investment are concerned, are given in Table 4.

An analysis of Table 4 indicates that those who have invested in the petroleum industry received a smaller return than did the investors in the other industries studied. The nine year average was 2.4 percent less for the petroleum interests than for the manufacturing concerns. The poor showing made by the petroleum industry in this respect may be due to several causes.

Table 4. Rate of return on invested capital of 30 oil companies compared with over 1,100 manufacturing companies by years.
1934-42²⁵

Year	:	30 oil companies	:	1,100 manufacturing
	:	percent ¹	:	companies percent ²
1934		2.9		4.3
1935		4.8		6.7
1936		7.6		10.4
1937		10.0		10.8
1938		5.1		4.8
1939		5.4		8.5
1940		6.3		10.3
1941		8.8		12.4
1942		6.6		10.1
Average		6.4		8.8

¹ Findings of Chase National Bank.

² Compiled by National City Bank.

²⁵ The Independent Petroleum Company, Senate Committee Hearings, United States Government Printing Office, Washington D. C., 1946

Some believe that oil prices have been depressed compared with other commodities. According to an exhibit presented by H. M. McClure in his testimony before the Special Committee Investigating Petroleum Resources, United States Senate, March 20, 1946 such was the case.²⁶ A portion of Mr. McClure's exhibit is given below:

Table 5. Price index for oil, farm products and all commodities, for selected periods. (1926=100)²⁷

	year 1926	: Dec. 1941 : U.S. enters : War	: 20 year : peak June : 1945	: present : index Aug. : 1945
All Commodities	100	93.6	106.1	105.7
Farm Products	100	94.7	130.4	126.9
Posted Price Oklahoma-Kansas Crude	100	58.9	58.9	58.9

Source-Publication of United States Department of Labor, Bureau of Labor Statistics.

Data gathered by the Texas Company (Texaco) shows that the retail price of gasoline, excluding sales tax, in 50 representative cities in the United States declined from 21.06 cents per gallon in 1923 to 12.75 cents in 1940. During the same period and for the same cities, the average sales tax, Federal and state, increased from 0.91 cents per gallon in 1923 to 5.66 cents per gallon in 1940.²⁸ Gasoline is the principal product derived from crude oil.

The lower net returns on investment may also indicate that

²⁶ The Independent Petroleum Company, op. cit., p. 120.

²⁷ Ibid., p. 120.

²⁸ Fanning, op. cit. p. 296.

costs for the petroleum industry have been unusually high. It may also indicate that the risk element has been great, or that the tax burden or other costs have been heavier than in other industries.

The analysis of the productivity of capital necessarily embraced the petroleum industry on a nation wide basis. The same results may not have been obtained if the investigation had been confined to Kansas. The Chase National Bank's study covered only the 30 companies listed above; the rate of return for the remainder of the industry (and in Kansas the major portion of it) has been left in doubt.

There are differences in the rate of return on capital within the industry itself. The bank's survey disclosed that in 1943 the 9 producing companies realized a return of 13.3 percent, the 4 companies with production averaging in excess of refinery requirements, 10.3 percent and the 17 companies with refinery requirements in excess of productions, 7.7 per cent.²⁹

It appears from the above that the industry in a state in which crude production is in excess of refinery operations would enjoy a higher rate of return than the average for the whole industry. The following Kansas oil statistics for 1947 as reported by the Kansas Corporation Commission show that it was predominantly a producing state:³⁰

²⁹ Fogue and Coqueron, op. cit. p. 276.

³⁰ Kansas Oil and Gas Statistics, 1947, Memorandum; Research Department Kansas Legislative Council, March 4, 1948

Crude Oil Produced in Kansas	103,916,169	bbls.
Crude Oil Exported	52,111,269#	bbls.
Crude Oil Imported	13,162,705#	bbls.
Crude Oil Produced and Refined in Kansas	51,804,900##	bbls.
Total Crude Oil Refined in Kansas	64,967,605	bbls.

Estimated

Based on estimated imports and exports.

The excess of production over refining was 38,948,564 barrels. This might indicate that the findings of the Chase National Bank are not strictly applicable to Kansas. The indication is that a major portion of the Kansas petroleum industry is devoted to a relatively more profitable phase of the industry's operations.

Apparently there is a greater return on the capital invested in the production of crude oil than on the capital invested in the refining process.

COMPARISONS IN COSTS

The element of production in costs as a factor to be considered in determining whether or not a severance tax is economically justified in Kansas had as an objective, not comparisons with other industries, but comparisons within the industry itself, according to geographical location. The question to be answered is, how have petroleum production costs in Kansas compared with those in other states? A direct answer to that question was not obtainable. An indirect approach to the problem is possible, but serious limitations are imposed upon inferences derived from that method.

The method employed consisted of obtaining operating income and operating profits from Moody's Investment Manual for selected companies and thus determining the operating costs by subtracting such profits from operating income. An attempt was made to select companies comparable in size and, as far as determinable, engaged in the same processes. Furthermore, they were selected upon the basis of having the great bulk of their operations within the confines of a single state. By dividing operating income into operating costs, an operating ratio was obtained. The operating ratios for the five years 1942-46 are given in Table 6.

Table 6. Operating ratios for selected companies by years 1942-1946*

Companies Selected	Operating ratios				
	: 1942	: 1943	: 1944	: 1945	: 1946
1. Cosden Petroleum Company (Texas)	91.4	90.9	91.9	92.9	94.9
2. Derby Oil Company (Kansas)	87.1	84.9	86.2	86.4	88.7
3. General American Oil Company of Texas	69.7	70.7	74.2	67.2	60.2
4. Hancock Oil Company of California	90.8	85.4	74.2	77.4	84.9
5. Honolulu Oil Corporation (California)	66.9	58.4	57.5	62.0	59.2
6. Messer Oil Corporation (New York-Pennsylvania)	69.4	83.2	85.1	73.6	70.4
7. Mid West Oil Company (Wyoming)	31.5	35.8	32.6	36.4	39.1
8. Panhandle Producing and Refining Company Texas	96.6	89.9	91.6	93.6	95.7
9. Root Petroleum Company (Louisiana)	88.5	87.2	86.7	89.6	92.3
10. Sunset Oil Company (California)	96.6	96.4	95.1	94.5	94.4

*Source: Calculated from financial statements in Moody's Manual of Investments, Industrial Securities, Moodys Investment Service New York, 1943-47.

The term operating ratio may be defined as the percentage of operating revenue consumed by operating expenses. Under normal conditions, it reflects the operating efficiency of a concern. Thus it is that a concern whose operating ratio is normally 90 percent requires 90 cents out of every dollar of sales to meet operating costs, leaving only 10 cents for all other charges and profits.³¹ The lower the ratio, then, the greater is the efficiency reflected.

The limitations imposed upon the analysis are that a favorable ratio may be due to managerial efficiency and an unfavorable ratio may be due to lack of managerial efficiency. In that case, normal differences in costs may become obscure. Also, it is possible that the sample used is not sufficiently representative. For instance, only one Kansas company was available and none at all representing Oklahoma.

Analysis of Table 6 reveals that the Derby Oil Company representing Kansas compares favorably with other companies in the Mid-Continent Gulf region. In fact only one company in that area, the General American Oil Company of Texas, has a lower operating ratio. Generally speaking, the companies representing California, New York-Pennsylvania and Wyoming had lower operating ratios than did those companies in the Mid-Continent Gulf region, although there were exceptions.

Taking the lowest operating ratio as indicating the best ratio between operating income and operating expenses and rank-

³¹ Badger, R. E. and H. G. Guthman, "Investments Principles and Practices", Prentice-Hall, New York, 1942.

ing the companies accordingly, the comparative position of the Kansas company may be shown to better advantage. The Derby Oil Company ranked fifth in 1942 and 1943 and sixth in the other three years in relation to all the companies analyzed. It ranked second among the companies in the Mid-Continent Gulf area.

Of the states represented, Louisiana and Texas are notable severance tax states. This may, perhaps, account for the comparatively higher operating ratios encountered in the companies selected from those states, that is, with the one exception noted. There is, of course, the limitation that the companies may not be representative of their respective areas. Because the one Kansas Company compared favorably with others in the Mid-Continent Gulf area is no positive indication that the Kansas industry on the whole would do so. Differences within the same state are possible as well as between states and regions, as references to the three Texas companies selected would verify.

An indication of regional differences in cost (and price) is given in Table 7.³²

³² Ralph, H. D., "Report on Production Costs", Oil and Gas Journal 41:54-5, Jan, 1943.

Table 7. Per barrel average sales value at posted-field price, net cost of production and margin between the two for the United States by region, third quarter, 1941

Region or state	: Value	: Cost	: Margin
California	\$1.025	\$0.587	\$0.438
Rocky Mountain	0.982	0.470	0.512
Mid-Continent Gulf	1.158	0.928	0.330
Illinois	1.355	0.627	0.728
Eastern	1.992	1.458	0.534
United States	\$1.171	\$0.764	\$0.407

*Source: United States Tariff Commission Report to OPA, Jan. 27, 1942.

Noticeable in the above tabulation is the fact that the Mid-Continent Gulf area had a smaller margin between value and cost than did any of the others. This is equivalent to a higher operating ratio. Moreover the pattern set by the above table roughly approximates the results obtained by using the operating ratios with the selected companies. Unfortunately, a further breakdown into states was not given for the Mid-Continent Gulf area.

Differences existed in costs, prices and margins for individual pools within each region. As an example net cost for the Ramsey pool in Oklahoma for the first nine months of 1941 was \$0.51; for the Fitts pool \$1.92. The average net cost for Oklahoma was \$0.92. In the Ramsey pool, prices exceeded cost by \$0.68; in the Fitts pool, cost exceeded price by \$0.80.

The majority of fields showed an excess of average value

per barrel over average net cost. Fields in which cost was above value all or much of the period were the heavy oil fields in California, the Rodessa pool in Louisiana, Western Kentucky, and Ohio.³³

RELATIVE IMPORTANCE OF MAJOR COMPANIES IN KANSAS

A factor influencing the competitive position of the Kansas petroleum industry is the relative amount of production in the state for which the so-called major companies are responsible as against that produced by smaller independent operators.

Large firms are usually in a better position than smaller ones to absorb a tax or any addition to cost, (or deduction from revenue). The more states included in their operations, the less should they feel the effect of an encroachment upon their profits in one state.

Independent operators, on the other hand, are in a different situation. Usually their area of operations is confined if not to one state, at least to not more than two or three. A Kansas independent operator, then, would not generally have out-of-state production to act as a shock absorber in case both the impact and incidence of taxation fell upon him. It is possible that for a small scale producer whose operating margin is narrow, a severance tax might mean the difference between

³³ Ibid., pp. 54-5

operating at a small profit, or not operating at all.

A portion of the study conducted by the Petroleum Department of the Chase National Bank brought to light information on the relative amount of production by major companies in various states. The survey indicated the total amount of production for the whole industry and the amount produced by the 30 firms enumerated previously. The resulting figures are given in Table 8.

Table 8. Domestic net crude-oil production of 30 companies, in the United States, 1943³⁴

State	In million barrels		Percent of total crude
	whole industry ¹	30 companies:	produced in the U.S.
California	247	154	61.8
Illinois	72	47	65.3
Kansas	93	37	39.8
Louisiana	108	65	60.2
Oklahoma	108	65	51.9
Texas	519	324	62.4
All other	166	75	45.2
Total	1,315	758	51.6

¹ Based on 87.5 per cent of gross production.

The above tabulation shows that the 30 companies accounted for a smaller percentage of production in Kansas than in any of the other principal oil states. Any conclusion to the effect that the great bulk of Kansas production is due to independent operators however, must be tempered by the possibility that the 30 oil com-

³⁴ Fogue and Coqueron, op. cit. p. 279

panies may not include all of the major companies in the country. If it were a certainty that only 39.8 percent of Kansas petroleum were produced by major firms, then the remainder, or 60.2 percent could be attributed to independent producers and the Kansas competitive situation considered proportionately weaker. Such may not have been the case. Others than those included in the Chase National Bank's survey may have been in operation in Kansas.

There is also the question of just how the cooperative oil producers should be classified. Mr. H. B. Fell of Ardmore, Oklahoma, filed before the Special Committee Investigating Petroleum Resources, portions of the seventeenth annual report of Consumers Cooperative Association, Kansas City, Missouri, dated November 29-30, 1945. According to that report, the association at the time had 186 producing wells in Kansas, 73 in Oklahoma, 108 in Illinois and 2 in Texas for a total of 369.³⁵ The 186 Kansas Wells constitutes more than half its total. However, such an association may be classified, its concentration in Kansas requires that qualifications be set to any inferences drawn from Table 8. The competitive position of the Kansas Petroleum industry may be comparatively weak, but apparently not so much as indicated in the above tabulation.

³⁵ The Independent Petroleum Company Hearings, op. cit. p. 363.

EXTENT OF STRIPPER WELL PRODUCTION

The last factor to be considered in determining the comparative position of the Kansas petroleum industry, is the relative quantity of oil production attributed to marginal producers. They are called, in the parlance of the oil industry, stripper operators. Mr. J. D. Sandefer of Breckenridge, Texas in his statement before the Special Committee Investigating Petroleum Resources, defined a stripper well as one in which income and expenses are approximately the same.³⁶ In the same testimony, he also stated that according to the OPA records, 74 percent of the wells of the Nation were classified as stripper wells. An earlier statement by H. M. McClure of Michigan before the same Committee indicates that in 1944, of the 412,851 producing oil wells in the Nation, 296,389, or 71.8 percent were classified as stripper wells. In the same years, those stripper wells produced 217,041,621 barrels of oil, or 12.9 percent out of a total United States production of 1,678,376,000 barrels. Average daily production per well was 11.1 barrels for all oil wells and 2.0 barrels for the stripper wells.³⁷

Table 9 presents part of the results of a survey conducted by the National Stripper Well Association and the Inter-State Oil Compact Commission, for the year 1944, and comprises a por-

³⁶ Ibid., p. 344.

³⁷ Ibid., p. 104

tion of the exhibit presented before the Senate Committee by Mr. McClure. Kansas stripper wells accounted for 29.1 percent of its total production as compared to the 12.9 percent for the nation. Among the first ten oil producing states, Oklahoma with 46.7 percent, Michigan with 33.7 percent and Arkansas with 20.7 percent had a comparatively high production by stripper wells. Others among the first ten, California, Illinois, Louisiana, New Mexico, Texas, and Wyoming, had less than 10 percent of their total production by stripper wells.

Table 9 would indicate that compared with Oklahoma, and at a greater distance, Michigan, Kansas production in 1944 enjoyed a safer margin of profit on the average. Compared with the other important oil producing states, however, its position was unfavorable.

According to Department of Interior Statistics, there were 25,000 producing wells in Kansas in 1944.³⁸ The 16,780 stripper wells then constituted 67 percent of the wells in Kansas. Oklahoma had 51,900 wells,³⁹ and 95.2 stripper percentage; Texas 102,300 wells⁴⁰ and 31.5 percent strippers; Louisiana 7460⁴¹ wells and 35.9 stripper percentage.

A strict adherence to the classification of stripper wells in accordance with the definition given above apparently does not occur in Kansas. All pools with an average production of 25

³⁸ Department of Interior, Bureau of Mines, Minerals Yearbook, 1945, p. 1079

³⁹ Ibid., p. 1079

⁴⁰ Ibid., p. 1079

⁴¹ Ibid., p. 1079

barrels per day were dropped from proration, and wells in such pools were considered stripper wells in arriving at the 1944 total production figure.⁴² In view of that fact, it appears likely that the 29.1 percent of total production attributed to stripper wells is rather high. A downward revision of the 67 percent of wells classified as strippers would also be indicated.

Table 9. Production of Oil in the United States for the industry and stripper wells, with percentage of total produced by stripper wells, by state, 1944.⁴³

State	Barrels produced		No of	
	(000 omitted)		Stripper : production	
	All wells	Stripper wells	wells	of strippers
Arkansas	29,438	6,089	2,436	20.7
California	311,776	29,400	10,500	9.4
Colorado	2,994	155	101	5.2
Illinois	77,052	7,367	15,050	9.6
Indiana	5,053	2,039	1,449	40.4
Kansas	98,396	29,800	16,760	29.1
Kentucky	9,263	4,604	14,300	47.8
Louisiana	129,389	6,108	2,677	4.7
Michigan	18,510	6,230	2,783	32.7
Mississippi	16,402	168	31	1.0
Missouri	45	45	123	100.0
Montana	8,529	2,731	1,860	32.0
Nebraska	440	440	72	100.0
New Mexico	39,563	2,564	1,102	6.2
New York	4,772	4,772	20,900	100.0
Ohio	2,967	2,104	28,483	70.9
Oklahoma	124,648	59,200	49,398	46.7
Pennsylvania	14,141	14,118	83,000	99.0
Tennessee	10	10	15	100.0
Texas	748,268	55,226	32,170	4.7
West Virginia	3,115	3,115	17,300	100.0
Wyoming	32,714	2,856	1,878	8.7
Total United States	1,678,455	217,041	296,388	12.9

⁴² The Independent Petroleum Company Hearings, Op. cit. p. 125

⁴³ The Independent Petroleum Operator, Op. cit. pp. 120-1

SUMMARY AND CONCLUSIONS

Summary

State government requirements for new revenue sources have brought about taxes on natural resources. Its consideration for adoption in Kansas has been attended with controversy. The purpose of this study has been to resolve a portion of the disagreement which has arisen, through an investigation of the economic factors involved.

Aside from defining it, giving its classification, recapitulating a few of the arguments for and against it, and a brief discussion of its use and position among state levies, little specific attention was given the severance tax itself. Rather this study has been devoted more to an investigation of one of the industries upon which the tax would be imposed, namely the petroleum industry.

It has been found that the Kansas petroleum industry has attained a relatively important position among the oil producing states, ranking fifth, usually, in importance among them. Generally less than 10 percent of the nation's production comes from Kansas.

An investigation of the existing tax burden of the petroleum industry disclosed the fact that it has been a substantial supporter of government on the federal, state and local levels, and through a variety of taxes.

It was indicated through studies made by two large financial institutions that the return on capital invested in the petroleum industry has been rather consistently lower than capital employed in manufacturing industries. It was found, however, that differences in profitability existed within the industry itself, crude production apparently being more fruitful of profits than refining. Statistics indicated that Kansas production operations exceeded refining operations within the state.

Analysis by the use of operating ratios indicated that an oil company was not necessarily unprofitable by virtue of its being located in Kansas. The one Kansas company studied, in fact, had an extremely favorable record compared with other companies studied in the Mid-Continent Gulf area.

The 30 major companies involved in the Chase National Bank's survey, it was revealed, accounted for a smaller percentage of production in Kansas than in any of the other leading oil producing states. Conclusions to the effect that this indicates a higher degree of home ownership or independent operations were necessarily qualified by the possibility of other major concerns being more concentrated in Kansas. The scope of operations of cooperative associations, and doubt as to their classification made the qualification doubly necessary.

Production of oil by stripper producers in Kansas was found to be a substantial part of its total production, being 29.1 percent. This was considerably in excess of the national average but much lower than Oklahoma's 46.7 percent. The relation of

stripper wells in Kansas to the total of all wells in the state was found to be 67 percent, as against a national average of 74 percent. Qualifications must be attached to the above figures because the classification of stripper wells in Kansas does not adhere strictly to the definition of them.

Conclusions

Much that is contradictory was found in the present study so much so that definite conclusions derived from the evidence obtained would be extremely difficult to defend. The data presented has been indicative rather than definitely conclusive.

It is the writer's belief that a small severance tax would not work a disastrous hardship upon the Kansas petroleum industry, perhaps one sufficiently large to equate inequity, if it exists, under the general property tax. A tax on the scale enacted in Louisiana, Texas or Oklahoma seems hardly advisable.

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